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the Devonian, the first known Musci, Hepatica and Fungi in the Tertiary. Plant remains in glacial deposits are exactly the same as species now living a little farther to the north. The Carboniferous fern-species which have been figured and named outnumber those of the whole world now living. The coal flora was probably practically identical all over the world. Every time a new horizon is opened up, even down to the Tertiary, there are many new fossil ferns discovered in it. A species in paleobotany simply means a description of a certain organism. We may find that some or many of these actually belong to the same species.

Discussion followed, in which Dr. Underwood, Mr. Eugene Smith and the Secretary participated. Dr. Underwood called attention to the descent of the ferns, not from the mosses, but probably from earlier generalized ancestors of both; and spoke of the disparity in numbers between the fossil and the living ferns of Pennsylvania—45 living, but at least 375 fossil—and asked: "How many of the 45 now living in Pennsylvania are at present being preserved in sediments?" Many of them are seldom found above ground, to say nothing of their occurrence beneath.

The second subject presented was the exhibition and description of a hygroscopic plant-specimen by Dr. C. J. Eames. The specimen was originally described in an article entitled 'The Resurrection Flower' in *Harper's Monthly*, April, 1857, p. 619. Dr. Eames' specimen seemed as if it were the ripened circle of ovaries of some malvaceous flower, and displayed very marked hygroscopic movement, expanding completely within fifteen minutes after moistening. Dr. Eames, a chemist, obtained his specimen in 1860 from Dr. I. Deck, a chemist, who said that he had secured this, and one other like it, about 1849 when in Upper Egypt. The other specimen passed into the possession of Humboldt. Dr. Eames exhibited specimens of *Selaginella* and *Anastatica* for comparison, their hygroscopic movement being less perfect. In the discussion following Dr. Schoeney stated that he has retained *Equisetum* spores which have held their hygroscopic power for ten years unimpaired.

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Secretary.

#### BOTANICAL NOTES.

##### THE POPULARIZATION OF BOTANY.

FROM time to time attempts are made to popularize some department of science, with less or more success according to the abilities of the author. In this country we have had many illustrations of how not to do such a work, with a few examples which have been successful. Botany has perhaps more than any other science suffered from the attempts of unprepared authors, and, as a consequence, we have had a swarm of books and booklets filled with all kinds of misinformation in regard to plants. It is little, if any, better abroad, but there one finds, now and then, a really good book which is popular in style and yet accurate in regard to its matter. Perhaps the explanation of the latter fact may be found in the other fact that occasionally an eminent botanist undertakes the task of writing for the people. One of the latest illustrations of this is the third edition of Van Tieghem's 'Éléments de Botanique.' That the author is thoroughly prepared to present the subject needs no discussion here, and an examination of the text shows that he has been able to present it in such form as to make it readable to any one of ordinary ability. This result has been attained by the use of vernacular terms, or, where these did not exist, by the modification of technical terms into forms which so nearly resemble the vernacular as to be readily accepted by the ordinary reader. In this manner the author is able to discuss, in successive chapters, topics like the following: the body of the plant, the root, the stem, the leaf, the flower (in all of which the morphology is first taken up and then followed by the physiology), development of the phanerogams, formation of the egg and development of vascular cryptogams, formation of the egg and development of mosses, formation of the egg and development of thallophytes, development of the race. In the second part of his book the author boldly takes his readers through the difficult field of systematic botany, from thallophytes to phanerogams, closing with a chapter on the distribution of plants.

We do not have to agree with what we must regard as little better than scientific vagaries in some portions of the author's discussions of the

relationships of certain flowering plants when we express admiration for the general plan and spirit of the work. We do not have to approve of many of the attempts of the author to avoid the use of Latin names of plants in order to be able to say that the book is one to be commended. The author has shown us how a scientific man may write so that the people may read and will read what is written. For this we owe him our thanks. We do not like 'Albuge blanc' for *Albugo candida*, 'Beggiate blanche' for *Beggiatoa alba*, 'Charagne fragile' for *Chara fragilis*, 'Botryche lunaire' for *Botrychium lunaria*, 'Welwitschie admirable' for *Welwitschia mirabilis*, 'Oponce vulgaire' for *Opuntia vulgaris*, etc. On the other hand, many of the author's modifications of the Latin names are quite happy: for example, 'Puccinie du gramin' for *Puccinia graminis*, 'Tilletie du Blé' for *Tilletia tritici*, 'Pézize' for *Peziza*, 'Oedogone' for *Oedogonium*, 'Zygnème' for *Zygnema*, 'Pteride' for *Pteris*, 'Agroste' for *Agrostis*, 'Myriophylle' for *Myriophyllum*, etc. When an American botanist who is prepared to undertake the work sets about the task of writing a botany for the people he will do well first to pretty carefully read Van Tieghem's book.

#### REPORT OF THE MISSOURI BOTANICAL GARDEN.

THE Tenth Annual Report of the Missouri Botanical Garden has just come to hand, and we are able again to form some estimate of the value of the gift which Henry Shaw made to Science when he set aside a fortune for the endowment of the Garden. From the report of the financial officers we learn that the net available income derived from the endowment after paying taxes, insurance, repairs, etc., is also a little more than \$37,000. Of this sum about \$21,000 have been used in the maintenance and improvement of the Garden as a collection of plants. About \$13,000 have been used in providing for the expenses connected with the scientific work of the Garden, including the herbarium, library, research work and publications. The remaining \$3,000 have been used for the Shaw School of Botany, and for the expenses of the annual 'Flower Sermon,' 'Flower Show,' and banquets, which were designated by Mr. Shaw. A careful study of the financial

report shows that the trustees are so managing the estate as to increase its value, apparently with an eye to its greater usefulness in the future.

The net results botanically each year are the maintenance of a botanical garden of high scientific importance, and provision for the library, herbarium and publications which pertain thereto. We have now had ten reports, each including scientific papers of a high order of merit, dealing with many phases of botanical work. A few titles will suffice to show the range of these papers, as follows: 'Revision of the North American Species of *Sagittaria* and *Lophotocarpus*,' 'Juglandaceæ of the United States,' 'A Revision of the American Lemnaceæ occurring North of Mexico,' 'A Revision of the Genus *Capsicum* with especial reference to garden varieties,' 'List of Cryptogams collected in the Bahamas, Jamaica and Grand Cayman,' 'A New Disease of Cultivated Palms,' 'Notes on the Grasses in the Bernhardt Herbarium collected by Thaddeus Haenke and described by J. S. Presl,' 'A Sclerotoid Disease of Beech Roots.' A list has been published of the books and papers which have emanated directly and indirectly from the Garden, which shows that during the brief period of its existence no less than two hundred and twenty-three contributions have appeared. Could the generous founder return to see the results of his philanthropy he would doubtless feel that his hopes had been more than realized.

#### ATLAS OF OFFICINAL PLANTS.

THE second edition of Berg and Schmidt's 'Atlas der Officinellen Pflanzen,' which has been under way for several years, has reached the twenty-fourth *Lieferung* and Plate 140. The work maintains its high degree of excellence, and the plates are particularly to be commended for their scientific accuracy as well as beauty of drawing and coloration. When completed, this work will be of the greatest value to the student of medicinal plants, while at the same time it will be useful to the general botanist.

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